

Audit Report

REVIEW OF COST ESTIMATES FOR
THE LOS ANGELES COURTHOUSE PROJECT
REPORT NUMBER A080125/P/R/R09001

JUNE 23, 2009

**Office of Inspector General
General Services Administration**



Office of Audits

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U.S. GENERAL SERVICES ADMINISTRATION
Office of Inspector General

Date: June 23, 2009

Reply to: R. Nicholas Goco
Attn of: Deputy Assistant Inspector General
For Real Property Audits (JA-R)

Subject: Review of Cost Estimates for the Los Angeles Courthouse Project
Report Number A080125/P/R/R09001

To: Anthony E. Costa
Acting Commissioner, Public Buildings Service (P)

This report presents the results of our Review of Cost Estimates for the Los Angeles Courthouse Project. The review analyzed cost estimates for the Los Angeles Courthouse project alternatives to determine whether they are supported and based on valid criteria, analysis and assumptions.

The review observed that PBS used multiple methodologies to develop the five project alternative cost estimates examined. These methodologies are based on varying degrees of cost support and detail, thus providing varying degrees of accuracy and reliability. Further, some critical estimate assumptions were judgmental or even unknown. To improve PBS's construction cost estimating accuracy, we recommend that the Commissioner of the Public Buildings Service monitor cost estimates against actual results to identify factors that could be enhanced.

If you have any questions regarding this report, please contact me on (202) 219-0088.

A handwritten signature in blue ink that reads "R. Nicholas Goco".

R. Nicholas Goco
Deputy Assistant Inspector General for Real Property Audits
Real Property Audit Office (JA-R)



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EXECUTIVE SUMMARY

Purpose

The audit objective was to review cost estimates for the Los Angeles Courthouse project alternatives to determine whether they are supported and based on valid criteria, analysis and assumptions.

Background

The Administrative Office of the U.S. Courts (AOC) reports that Los Angeles federal court operations face serious space shortages, security concerns, and operational inefficiencies. The judiciary's internal five year plan has identified the Los Angeles Courthouse as the highest priority project in the country. Court operations in Los Angeles are currently split between two buildings – the Spring Street Courthouse built in 1938 and the Edward E. Roybal Federal Building and Courthouse built in 1993.

In July 2000, the House Committee on Transportation and Infrastructure authorized and Congress appropriated funds to design a new 41-courtroom courthouse in Los Angeles. Through fiscal year 2005, Congress had appropriated approximately \$400 million for the project. The General Services Administration (GSA) has acquired and prepared a site in downtown Los Angeles for construction of the new courthouse at a cost of approximately \$16.9 million. It has also spent \$16.3 million on courthouse design. However, the project has experienced several delays, and in March 2006, GSA cancelled the procurement when it became apparent that the construction cost was going to exceed the approved budget.

As GSA reconsidered its strategy to meet the Court's needs, the local construction market experienced further cost escalations as demand for construction labor and materials has grown in the Southern California market. Consequently, GSA has evaluated a number of project alternatives and has provided various cost estimates to stakeholders as a way of determining what can be built within the current budget, and how much further funding may be necessary.

Because of the challenges faced by the Los Angeles Courthouse project, in particular the probable need for more funding, Congress asked the GSA Office of Inspector General to review the project cost estimates to determine whether they are supported and based on valid criteria, analysis and assumptions.

Results in Brief

According to the Government Accountability Office, "Cost estimating requires both science and judgment. Since answers are seldom – if ever – precise, the goal is to find a reasonable 'answer.' Cost estimates are based on many assumptions, including the rate of inflation and when

construction will begin. Generally, the more information that is known about a project and is used in the development of the estimate, the more accurate the estimate is expected to be.¹”

We reviewed cost estimates for each of the four project alternatives that had been under consideration prior to the start of our work, as well as a fifth option that was later considered and adopted by GSA. We observed that Public Buildings Service (PBS) used valid methodologies to develop each of the project alternative cost estimates. However, the different methodologies are based on varying degrees of cost support and detail. Therefore, cost estimate accuracy may also vary. Further, some critical estimate assumptions were judgmental or even unknown. Subjective escalation rates and a 15 percent “limited market fee” have considerable impact on projected costs and, if inaccurate, would greatly reduce estimate reliability. Additionally, estimates did not clearly identify project assumptions, thus adding a degree of uncertainty, as we were unable to ascertain what the actual construction or renovation would entail. It should also be noted that construction time frames related to these alternatives play an important part in evaluating the cost estimations – the longer the construction time frame extends out, the more the estimated costs increase due to projected cost escalations and the less reliable the estimates become.

Recommendation

We recommend that the Commissioner of the Public Buildings Service improve PBS’s construction cost estimating accuracy by monitoring cost estimates against actual results to identify factors that could be enhanced.

¹ May 2008 GAO report, “PRISON CONSTRUCTION: Clear Communication on the Accuracy of Cost Estimates and Project Changes is Needed”

INTRODUCTION

Background

The Administrative Office of the U.S. Courts (AOC) reports that the Los Angeles federal court operations face serious space shortages, security concerns, and operational inefficiencies. The judiciary's internal five-year plan has identified the Los Angeles Courthouse as the highest priority project in the country. Court operations in Los Angeles are currently split between two buildings – the Spring Street Courthouse built in 1937 and the Edward R. Roybal Federal Building and Courthouse built in 1993.

These issues have been on-going for more than two decades. In 1985, the General Services Administration (GSA) received approval to build a new courthouse and federal building to supplement the existing Spring Street Courthouse and meet the expansion needs of the U.S. Courts operations in Los Angeles. However, the AOC favored the construction of an annex for the existing courthouse. At that point, the General Accounting Office² (GAO) was asked to examine the proposed alternatives and determined that there was insufficient evidence for Congress to reconsider the approved project.³ Eventually, the new courthouse (the Roybal Courthouse) was completed in 1993. It provided 28 courtrooms (10 district and 18 bankruptcy) as well as the capability for converting office space to additional courtrooms in the future, but left the District Court operating out of two courthouses. In 1998, funds for build-out of six magistrate courtrooms in 312 North Spring Street were reprogrammed for build-out of the six magistrate courtrooms in the Roybal Building.

Even after the construction of the new courthouse and federal building, the housing needs of the Courts were still an issue as concerns arose about the security of the Spring Street Courthouse and the split operations of the Courts. GSA contracted for a new study to examine how these needs could be addressed. The June 1997 Feasibility Study/ Master Plan⁴ study examined the then-current court conditions, as well as viable alternatives to meet the 10- and 30-year space requirements of both the Courts and GSA. Five alternatives that would achieve both GSA's and the Court's long term goals were considered.

In July 2000, the House Committee on Transportation and Infrastructure authorized and Congress appropriated funds to design a new 41-courtroom courthouse in Los Angeles and through fiscal year (FY) 2005 had appropriated approximately \$400 million for the project. The project goal has been to relieve overcrowding, reduce the inefficiencies of splitting operations between two buildings, and improve security. Since then, GSA has acquired and prepared a site in downtown Los Angeles for construction of the new courthouse at a cost of approximately \$16.3 million. It has also spent \$16.9 million on courthouse design.

² The General Accounting Office is now called the Government Accountability Office.

³ GAO Briefing Report, "New L.A. Federal Courthouse: Evidence Is Insufficient to Suggest That Congress Reconsider Its Approval," March 1988 (GAO/GGD-88-43BR).

⁴ *U.S. Courts, Central District of California, Los Angeles Feasibility Study/ Master Plan* study, released by Kaplan McLaughlin Diaz June 24, 1997 under GSA Contract No. GS-09P-KTD-0088.

However, the construction project incurred several delays, including one caused by designing the courthouse with 54 courtrooms rather than the authorized and funded 41 courtroom building. Then in March 2006, GSA cancelled the procurement for the construction contractor when one of the two contractors bidding on the project withdrew and it became apparent that the construction cost was going to exceed the approved budget.

As GSA has reconsidered its strategy to meet the Court's needs, the local construction market experienced further cost escalations as demand for construction labor and materials grew in the Southern California market. In an effort to regroup, in October 2006 GSA hired a contractor to perform a market study for construction in the Los Angeles area. This study showed that local construction contractors expressed concerns over the size of the project, the adequacy of funding, and GSA's ultimate commitment to proceed with the project.

In addition, GSA also tried to identify its options using the available funding. GSA developed a proposal to renovate both the Roybal and Spring Street Courthouses using the available funding. In doing so, GSA commissioned a study by DMJM Design (DMJM) to develop cost estimates and phasing plans for both the approved prospectus and the Roybal-Spring Street renovation. The March 2007 preliminary report estimated that the cost to meet the Court's needs through the 41 courtroom courthouse would exceed \$1 billion, but that the Roybal-Spring Street renovation could be achieved for substantially less. However, the report was never completed after the Courts rejected the renovation option. Subsequently, in May 2007 the Courts proposed a 36-courtroom courthouse as a possible solution. This courthouse would be based on the design for the 41-courtroom courthouse with several changes to reduce the project costs.

GSA, in conjunction with the Office of Management and Budget (OMB), Congress, and the Courts, has considered these project alternatives, from the scaled down versions of the original project to extensive renovations of the existing buildings to construct additional courtrooms. GSA has provided cost estimates to stakeholders as a way of determining what can be built within the current budget, and how much additional funding may be necessary. To detail the options under consideration, GSA submitted a matrix to OMB listing four courthouse project alternatives. A subsequent fifth option was later considered.

Because of the challenges faced by the Los Angeles Courthouse project, in particular the probable need for more funding, Congress asked the GSA Office of Inspector General to review the project cost estimates. Specifically, on January 10, 2008 the Subcommittee on Economic Development, Public Buildings, and Emergency Management of the Committee on Transportation and Infrastructure requested that the audit review the cost estimates for the Los Angeles courthouse project to determine whether those cost estimates are supported and based on valid criteria, analysis and assumptions.

Objective, Scope and Methodology

The audit objective was to review cost estimates for the Los Angeles Courthouse project alternatives to determine whether they are supported and based on valid criteria, analysis and assumptions. To accomplish this objective, we reviewed cost estimating procedures for each of the five project alternatives and traced estimate line items to source documents. We held discussions with Public Buildings Service (PBS) staff in the Office of the Chief Architect (OCA)

and in the Pacific Rim Region to understand the project alternatives and estimating methodologies. We toured the Roybal and Spring Street buildings with PBS officials to understand the building renovations being proposed.

Audit fieldwork was conducted in the Pacific Rim Region as well as in the GSA Office of the Chief Architect.

Fieldwork was conducted between February and July 2008. The audit was performed in accordance with generally accepted Government auditing standards.

RESULTS OF AUDIT

Overview

We reviewed cost estimates for each of the four project alternatives that had been under consideration for the Los Angeles courthouse project prior to the start of our work, as well as a fifth option that was later considered and adopted by GSA. PBS used different methodologies to develop these estimates since the alternatives were at different stages of development, and the estimates were often developed within short time frames. The estimates were supported to varying degrees as the level of detail for the respective estimates varied by the stage of development and the methodology used. As such, in some instances the estimates included miscalculations and judgmental assumptions, as well as many unknown variables that can still impact the accuracy of the estimates. In addition, until a project's scope is defined in detail, it is difficult to accurately estimate the ultimate project cost.

Differing methodologies used to develop estimates offer varying levels of detail.

Original Construction Prospectus with 41 Courtrooms

The first option is the most recently authorized prospectus PCA-CTC-LA05. This option calls for the construction of a new courthouse containing 41 courtrooms and 40 chambers. Further, the Court requested the construction of four additional courtrooms in, and the partial renovation of, the Roybal building. The Roybal building would contain 20 courtrooms and 20 chambers, thus providing a total of 61 courtrooms and 60 chambers⁵ at an estimated cost of \$1.139 billion. Of this amount, \$979 million is for the new courthouse, while \$161 million is for the Roybal renovation. [Table 1](#) and [Table 2](#) illustrate the respective cost breakdowns. This cost estimate assumed that construction would start in 2009 and be completed by 2014.

The cost estimate for the approved prospectus project is the most detailed estimate provided. It is based on partially completed design drawings and bridging documents, and is a hybrid derived by Pacific Rim PBS staff from estimates prepared individually by four contractors: Jacobs Facilities, Davis Langdon, Parametrix, and Faithful & Gould.⁶ The contractors were unable to agree on an overall estimate, largely due to disagreements over steel quantities and costs. Therefore, Pacific Rim PBS Property Development staff used what it felt were reasonable midpoints from these estimates for each element, resulting in the base estimate of \$353 million. Overhead, profit, escalation, construction contingency, design, management and inspection, and "limited market" costs were added to reach the total estimate of \$979 million for the construction of the new courthouse as shown in [Table 1](#).

⁵ Excludes Bankruptcy courtrooms and chambers.

⁶ Under the DMJM study, cost estimates were developed by both Parametrix and Faithful & Gould.

*Table 1: New Courthouse**

Description	Cost
Construction	\$ 353,607,138
Design Contingency (5%)	17,680,357
Overhead (15%)	53,041,071
Profit (5%)	17,680,357
Subcontractor Overhead/Profit (5%)	<u>17,680,357</u>
Subtotal	459,689,280
Limited Market (15%)	68,953,392
Escalation	<u>302,807,523</u>
Subtotal	831,450,195
Construction Contingency	<u>58,201,514</u>
Subtotal	889,651,708
Design	36,168,987
Management and Inspection	<u>53,379,103</u>
TOTAL	\$ 979,199,798

* Assumes construction start/finish of 2009/2014

In addition, the estimate for the Roybal companion project was based on several studies: the August 9, 2005 Jacobs Realignment Program Study; the June 30, 2005 R.E.M Engineering Company, Inc. Roybal Building Engineering Report; and Roybal Seismic and Blast reports conducted by Pacific Rim Region consultants. Construction costs were estimated at \$116.6 million and include a ten percent contingency. Design and management and inspection (M&I) were added to result in an estimated total project cost of \$148.9 million. Since this estimate was for FY 2009 design, an escalation factor of 12.167 percent was used to escalate the project to \$166.9 million for FY 2010 design. PBS expected to recover approximately \$6 million in costs from the Courts, so reduced the estimate to \$161 million as shown in [Table 2](#).

Table 2: Roybal Renovation

Description	Cost
Sum of System Elements	\$ 47,811,224
Design and Site Contingency (10%)	<u>4,781,122</u>
Subtotal	52,592,346
Overhead, Profit, and Bonds (20%)	<u>10,518,469</u>
Subtotal	63,110,816
Escalation (68%)	<u>42,915,355</u>
Estimated Cost of Construction at Award (ECCA)	106,026,170
Construction Contingency (10%)	<u>10,602,617</u>
Estimated Cost of Construction	116,628,787
Design (14%)	15,852,000
Management and Inspection (14%)	<u>16,366,900</u>
Estimated Total Project Cost	148,847,687
Additional Escalation (12.2%)	<u>18,110,298</u>
Subtotal	166,957,985
Less Costs to be Paid by Courts	<u>(6,000,000)</u>
TOTAL	\$ 160,957,985

* Assumes construction start/finish of 2011/2014

Revised Proposal with 36 Courtrooms

The second option is a scaled down version of the 41-courtroom courthouse. This option would provide a smaller 36-courtroom, 45-chamber courthouse with the potential to accommodate 41 courtrooms in the future. To minimize costs, the design was modified through a combination of value engineering, program reduction, and redesign. The full height atrium was reduced to three levels, the plan profile was simplified at the chamber side of the building, the curtain wall was simplified, and one floor was removed from the building, reducing the size of the building from 1,106,300 to 925,096 gross square feet (GSF). Like the original prospectus, it would also involve a partial renovation of Roybal, including the build-out of four new courtrooms. The total project cost estimate for this option is \$1.036 billion: \$875 million for the new courthouse and \$161 million for the Roybal companion project. This cost estimate assumed that construction would start in 2009 and be completed by 2014.

The cost estimate for the new building for this option is based on an “adjusted scheme” of the original prospectus, whereby the curtain wall and superstructure prices were adjusted to reflect the above mentioned design changes. To develop this estimate, PBS adjusted the cost estimate for the 41-courtroom courthouse from \$353 million to \$337 million to reflect the reduced scope and design changes of the 36 courtroom courthouse. PBS then added design contingency, general conditions, overhead, and profit, as well as the limited market fee, escalation, and contingency for a total adjusted scheme of \$787,621,977.

This was divided by 930,838, the square footage of the adjusted scheme, to develop a construction rate of \$846 per GSF for this modified design.⁷ This rate was multiplied by 925,096 GSF, the actual estimated square footage for the 36 courtroom courthouse, to reach \$782,631,000. Management and inspection costs of \$23.6 million were added to reach the total estimated project cost of \$875 million, including \$20.6 million for site, \$19 million for design money already spent, and \$29.3 million for additional design. Calculation details are shown in [Table 3](#).

⁷ This \$846/GSF rate assumes separate contracts for shell/core and tenant improvements. This requires extension of the construction period, as shell must be finished before the second contractor can commence work on tenant improvements. Consequently, an additional year of escalation is required, thus increasing construction costs by \$43 million.

*Table 3: Modified Prospectus Cost Estimate Calculation**

Description	Cost
Original Prospectus Cost Estimate	\$ 353,607,138
Adjusted Scheme Estimate	337,411,398
Design Contingency (5%)	16,870,570
General Conditions (15%)	50,611,710
Overhead and Profit (5%)	16,870,570
Additional Overhead and Profit (5%)	16,870,570
Subtotal (rounded)	438,634,817
Limited Market Fee (15%)	65,795,223
Escalation (46%)	231,665,266
Subtotal	736,095,306
Construction Contingency (7%)	51,526,671
Adjusted Scheme Estimate with Escalation	787,621,977
Divided by: Adjusted Scheme Gross Square Feet (GSF)	930,838
Adjusted Scheme Construction Rate	\$ 846/GSF
Multiplied by: Estimated Courthouse GSF	925,096
Subtotal (rounded)	782,631,000
Site (FY 2001)	20,600,000
Design (FY 2001 & 2004)	18,990,000
Additional Design	29,296,000
Management and Inspection (M&I) (2004)	11,936,000
Additional M&I	11,680,000
Estimated Total Project Cost	\$ 875,133,000

* Assumes construction start/finish of 2009/2014

As mentioned above, this alternative also involves renovation of Roybal. The cost estimate for the Roybal renovation is displayed in *Table 2* in the *Original Prospectus with 41 Courtrooms* section.

Standalone Courthouse to Consolidate District Court Operations

The third option is to consolidate all District Court-related operations into one large new building. This building would contain a total of 54 courtrooms and 60 chambers. The total cost of this building was estimated at \$1.247 billion. This option is not considered viable as Congress has directed Roybal re-use. The calculations used for the cost estimate are shown in *Table 4*. This cost estimate assumes that construction would start in 2009 and be completed by 2016.

*Table 4: Consolidate Operations**

Description	Cost
Original Prospectus Escalated Cost Estimate	\$ 979,534,154
Divided by Original Prospectus GSF	1,016,300
Construction rate per GSF	\$ 964/GSF
Times GSF for 54 courtroom building	1,279,650
Subtotal	1,233,582,600
Plus demolition allowance	13,000,000
TOTAL	\$ 1,246,582,600

* Assumes construction start/finish of 2009/2016

The estimate for this option is not based on a design. PBS in the Pacific Rim Region generated the cost estimate based on the original prospectus project similar to the estimate for the smaller 36-courtroom option. Per the Project Executive, this was a fast calculation due to the limited time to compare alternatives. To estimate project costs, the escalated cost of the original prospectus was divided by its 1,016,300 GSF to reach a construction rate of \$964/GSF. This rate was multiplied by the 1,279,650 GSF for the larger 54 courtroom building to reach \$1.234 billion. A demolition allowance of \$13 million was added to reach \$1.247 billion.

Roybal-Spring Street Expansion

The fourth option for the L.A. Courthouse project involves re-housing tenants in the existing Roybal and Spring Street buildings.⁸ This renovation project would provide 42 courtrooms in Roybal (16 existing, 26 new) and 17 in Spring Street (9 historic and 8 renovated), for a total of 59 District Court courtrooms. It would also provide 61 chambers. Total project costs were estimated at \$540 million: \$261 million for Roybal and \$269 million for Spring Street. Additionally, \$10 million was included for 300 North Los Angeles Street (300 NLA), but this money was later reassigned to Roybal. This cost estimate assumed that construction would start in 2008 and be completed by 2014.

The Roybal-Spring Street Expansion option is based on a conceptual design that assessed GSA and tenant requirements, but without detailed architectural drawings. The concept was analyzed by DMJM and is detailed in the March 2007 "Roybal FOB and Spring Street Courthouse Expansion Study."⁹ The study was initiated in an attempt to resolve differences in opinion between GSA Pacific Rim and Central Office regarding the feasibility of renovating Roybal to meet the District Court's needs. The study incorporates the work of two companies that developed estimates for the Roybal reuse: Faithful & Gould and Parametrix.¹⁰ The \$540 million estimate is the total presented by Faithful & Gould, and is the higher of the two estimates¹¹. According to PBS personnel, the higher of the two estimates was chosen because it represented the worst case scenario given market conditions in Los Angeles at the time.

*Table 5: Roybal-Spring Street Expansion**

	Roybal	Spring Street	300 NLA	Total
Adaptive Use	\$ 138,611,111	\$ 124,886,900	\$ 6,836,760	\$ 270,334,771
BER/Systems	12,084,148	11,533,582	-	23,617,730
Security/ Seismic	<u>15,667,772</u>	<u>13,544,701</u>	<u>325,000</u>	<u>29,537,473</u>
Subtotal	166,363,031	149,965,184	7,161,760	323,489,975
Escalation	70,980,995	94,253,255	1,821,952	167,056,202
Contingencies	<u>23,734,403</u>	<u>24,421,844</u>	<u>898,371</u>	<u>49,054,618</u>
TOTAL	\$ 261,078,428	\$ 268,640,282	\$ 9,882,083	\$ 539,600,794

* Assumes construction start/finish of 2008/2014

⁸ The Drug Enforcement Agency and Equal Employment Opportunity Commission would move to alternative space.

⁹ The DMJM study is a DRAFT report that was never finalized.

¹⁰ DMJM was hired to perform the re-use study for the Roybal option under a task order to an IDIQ contract. The study incorporated the work of Faithful & Gould, and Parametrix. Faithful & Gould provided services under a task order to their IDIQ, while Parametrix worked under a task order to U.S. Cost, Inc.

¹¹ The Parametrix estimate was approximately \$442 million.

Both the Faithful & Gould and Parametrix estimates consist of four major components:

Adaptive Use - project costs directly related to Court-related renovations, such as the addition of courtrooms, judges' chambers, jury assembly areas, U.S. Marshals Service, attorney offices, etc. Adaptive use costs are estimated by using multiple rates/GSF, depending on type of space being converted.

BER/Systems - renovation work items identified by a Building Engineering Report (BER), a building study from a private consultant commissioned by PBS, to determine building deficiencies.

Security/Seismic - work items identified through other studies, such as seismic evaluation, blast vulnerability assessment and a previous realignment study that developed work needed in the building.

Escalation - building construction work is escalated on a phase by phase basis, until the mid-point of construction for each phase. Escalation is computed annually based on the GSA General Construction Cost Review. Rates must be approved by OMB.

Additionally, a 10 percent factor was added to the respective totals for contingencies. This is the standard GSA contingency for renovations.

It should be noted that the DMJM Roybal Re-use study was performed quickly, over only a two-month period according to one OCA employee. Further, the study is only a draft, as the consultant was directed by GSA at the request of the Courts to stop all work on the Roybal Alternative and to focus solely on reconciling the cost estimate for the new courthouse. As a result, estimates for Roybal have not been refined to the same level of detail as the estimate for the approved prospectus.

The assumptions utilized by the cost estimating contractors for the Roybal renovation could not be ascertained or assessed as the work was performed without written scopes of work. PBS was only able to provide limited documentation regarding the scope of the work performed and the assumptions utilized. Without a clear and documented scope of work, it is difficult to determine exactly what work the contractor was supposed to perform, what assumptions PBS had instructed the contractor to follow, and what assumptions were the responsibility of the contractor.

As this option is still at a conceptual stage, potential changes to the assumptions can affect the cost estimate. For example, the scope of work for Roybal on floors 13 through 16 includes converting U.S. Bankruptcy courtrooms to U.S. Magistrate courtrooms. In a spreadsheet listing differences between the OCA and the Pacific Rim Region in what project work each deemed necessary, OCA and the Region both estimated the cost to be approximately \$6.6 million. However, there are major differences in the underlying assumptions. In one instance, the Region estimated that \$4.5 million would be required to demolish and replace millwork in the U.S. Bankruptcy courtroom, while the OCA estimate stated that there was no need for demolition or

new millwork for this space.¹² According to information provided by DMJM to support the estimate for the work in Roybal, the estimate values the work on floors 13 through 16 at about \$21 million. According to DMJM, all converted courtrooms were upgraded as the goal was to make Roybal renovation as comparable as possible to new construction. As the project becomes more refined and these differing assumptions get resolved, the cost estimate is likely to change.

During our review of cost estimates, in response to an audit inquiry, DMJM identified two double-counting errors in the BER/Systems calculation. With escalation, these errors result in an overestimation of \$1,112,907. Additionally, some BER work items added to the project estimate for Roybal and Spring Street are now in progress or have been completed. For Roybal, the bollard installation project has commenced; with the escalation applied in the study, the cost is \$4,805,235. In the Spring Street building, the replacement of the boilers has been completed; with the escalation applied in the study, this cost is \$614,694. These amounts should be deducted from the cost estimate for this option.

Our review of the DMJM study also identified two additional calculation errors. The first was a double escalation that was applied to Court Infrastructure¹³ and Accessibility costs. These costs were brought into the calculation as 2011 costs, but were escalated again to the midpoint of the phase.¹⁴ As a result, Estimated Court Infrastructure costs were overstated by \$2.5 million, while the Accessibility costs were overstated by \$449,836. Second, Phase I was escalated to the end of the 12 month phase, not to the 6 month mid-point as required. The effect is an overestimation of Phase I costs by approximately \$1.5 million.

20 Courtroom Building with Roybal Renovation

Another option, developed subsequent to the start of the audit, was to construct a smaller courthouse and renovate existing space at Roybal. The new courthouse would contain 20 courtrooms and 20 chambers, while Roybal would contain 46 courtrooms and 55 chambers.¹⁵ The total project cost is estimated at \$701 million: \$378.6 million for the new building (see [Table 6](#)) and \$322.5 million for the Roybal renovation (see [Table 7](#)).¹⁶

¹² When the audit team made a site visit to the Roybal Building, the millwork in the current space appeared to be in pristine condition.

¹³ Court Infrastructure costs are Court requested items from a previous Roybal Realignment study consisting of a new mailroom, lobby screening and access controls.

¹⁴ Escalation is applied on a phase by phase basis, based on the mid-point for each individual phase.

¹⁵ Including 10 Bankruptcy courtrooms and chambers

¹⁶ Renovation costs were rounded up to \$322.5 million per the amended prospectus.

*Table 6: New U.S. Courthouse**

Description	Cost
Site (FY 2001)	\$ 20,600,000
Design (FY 2001 & 2004)	18,990,000
Additional Design**	11,545,000
Estimated Construction Cost (\$730/GSF including inside parking)	318,000,000
Management and Inspection	<u>9,500,000</u>
TOTAL	\$ 378,635,000

** Assumes construction start/finish of 2010/2013*

*** This design is no longer valid and the request for additional design is for the design of the new building as proposed.*

Estimated construction costs for the new courthouse are based on the OCA benchmark tool. The benchmark tool priced the project at a 3.5 year construction period and assumes construction can begin one year after design. Per the revised draft prospectus, estimated construction costs for the new courthouse are based on a rate of \$730/GSF (including inside parking), in addition to \$20.6 million for site acquisition, \$19 million for design already spent, \$11.5 million for additional design, and \$9.5 million for management and inspection.

PBS has been using benchmarks to set and validate project budgets since FY 1994. The benchmark tool is periodically refined and updated, and in 2006 was updated and used for projects beginning in 2009. The current benchmark tool develops the project costs by pricing out the costs for 10 previous courthouse projects (the 2004 version of the tool used 4 projects). The tool uses this information to standardize costs by building element and then uses this as the basis for developing a cost estimate based on specific elements of the planned courthouse. These elements include the number of courtrooms and chambers, square footage, parking, locality, etc. The benchmark tool then calculates the estimated cost for the project as of the end of FY 2006. PBS then escalates the estimated project cost to the projected midpoint of construction. Currently, PBS uses its own escalation rates, but prior to FY 2007 PBS used escalation rates approved by OMB. This escalated project cost becomes the benchmark, which is used to validate and/or establish the project budget.

Project managers are expected to oversee the design and construction processes to ensure the project costs stay within the benchmark. Typical costs drivers that they should monitor include building efficiency, site conditions, structure, exterior closure, etc. It should be noted that the target building efficiency for the benchmark is 67 percent, but a PBS study found the average courthouse efficiency is only 62 percent. This and similar deviations from the benchmark targets for other elements will cause the project to be over-budget unless steps are taken to reduce costs in other aspects of the project.

Currently, the historical data needed to evaluate the benchmark calculation and the escalation rates is not available as the current benchmark tool was initially used for projects proposed in the FY 2006 budget, many of which are not complete.

*Table 7: Roybal Renovation**

Description	Cost
F&G Roybal cost excluding Design and M&I	\$261,078,428
Jury assembly addition (transferred from 300 NLA)	<u>13,000,000</u>
Subtotal	270,960,511
Additional year of escalation (6%)	16,444,705
Design	21,000,000
Management and Inspection	<u>10,500,000</u>
TOTAL	\$ 322,023,313

* Assumes construction start/finish of 2010/2014

Construction costs for the Roybal companion project, shown above in *Table 7* are based on the Faithful & Gould estimate of \$261 million, plus \$13 million for additional jury assembly space (moved from 300 North Los Angeles Street), and \$16 million for an additional year of escalation. Twenty-one million dollars are added for design and \$10.5 million are added for management and inspection. Total renovation costs were estimated at \$322 million.

Estimates use judgmental escalation rates and “limited market fee.”

When estimating construction costs, PBS used the escalation rates shown in *Table 8*. Per the August 2004 "Managing the Cost of Courthouse Projects within the Benchmark," escalation rates may be obtained from the General Construction Cost Review Guide (GCCRG) but must be approved by OMB. However, PBS moved off OMB escalation rates for benchmark calculations in 2007. Instead, PBS now uses independent market surveys. The 16 percent rate for 2007 was based on a six-month period per a market study by Faithful & Gould. Subsequent annual rates were judgmental, based on the assumption that the Los Angeles market could not sustain such high rates. PBS consultants concurred with the estimated escalation rates. To evaluate the projected escalation rates, we contacted representatives of the Los Angeles school district and police department who were familiar with the local construction market. While they were not sure about the specific escalation rates used by PBS, they did agree that the market is cooling down.

It should also be noted that construction time frames related to these alternatives play an important part in evaluating the cost estimations – the longer the construction time frame extends out, the more the estimated costs increase due to projected cost escalations and the less reliable the estimates become.

Table 8: Escalation Rates

Year	Rate
2007	16%
2008	12%
2009	8%
2010	8%
2011	6%
2012	6%
2013	6%

In addition, PBS estimates for the Los Angeles courthouse project alternatives also include a 15 percent “limited market fee.” This factor was added to the project costs to compensate for the limited bidders for this project in the Los Angeles market. Market surveys of potential bidders by PBS indicated limited interest in this project, as the construction community had concerns over the size of the project and the perceived difficulties of working with the Federal Government. The project had already experienced the withdrawal of one of the two original bidders. The 15 percent figure appears to be subjective, although OCA noted that its consultants (DMJM, Parametrix, and Faithful & Gould) suggested it based on their experience in the Los Angeles market. However, Pacific Rim Region staff questioned the need to add this cost factor and felt they had taken actions to mitigate the effect of the local market conditions. In particular, the project had been separated into two smaller awards, one for shell/core and one for tenant improvements. Smaller awards may open up the project to more bidders.

Conclusion

According to the Government Accountability Office, “Cost estimating requires both science and judgment. Since answers are seldom – if ever – precise, the goal is to find a reasonable ‘answer’.” Cost estimates are based on many assumptions, including the rate of inflation and when construction will begin. Generally, the more information that is known about a project and is used in the development of the estimate, the more accurate the estimate is expected to be.¹⁷”

For the Los Angeles Courthouse project, the available information for each option varies along with the methodologies used to develop the cost estimates. PBS used different methodologies to develop the cost estimate for each of the project alternatives and the different methodologies are based on varying degrees of cost support and detail. As such, those estimates that are more refined and based on more detailed information should be more accurate. Further, the accuracy of the cost estimates will depend on the resolution of the assumptions used as the basis for certain project alternatives, as some critical estimate assumptions were judgmental. The assumptions for some estimates were not clearly identified, thus adding a degree of uncertainty as to what the actual construction or renovation would entail. Additionally, subjective escalation rates and a 15 percent “limited market fee” have considerable impact on projected costs and, if inaccurate, would greatly reduce estimate reliability.

Recommendation

We recommend that the Commissioner of the Public Buildings Service:

1. Improve PBS’s construction cost estimating accuracy by monitoring cost estimates against actual results to identify factors that could be enhanced.

¹⁷ May 2008 GAO report, “PRISON CONSTRUCTION: Clear Communication on the Accuracy of Cost Estimates and Project Changes is Needed”

Management Comments

PBS management concurs with the audit recommendation. Management comments are included in their entirety in Appendix A of this report.

APPENDIX A – MANAGEMENT COMMENTS



GSA Public Buildings Service

JUN 05 2009

MEMORANDUM FOR R. NICHOLAS GOCO
DEPUTY ASSISTANT INSPECTOR GENERAL
FOR REAL PROPERTY AUDITS (A-R)

FROM: ANTHONY E. COSTA
ACTING COMMISSIONER (P)

SUBJECT: Draft Report: "Review of Cost Estimates for the Los Angeles
Courthouse Project," Report Number A080125

The Public Buildings Service (PBS) appreciates the opportunity to review and comment on the draft report, "Review of Cost Estimates for the Los Angeles Courthouse Project," Report Number A080125. The Office of Inspector General's (OIG) draft report includes one recommendation to PBS to improve PBS's construction cost estimating accuracy by monitoring cost estimates against actual results to identify factors that could be enhanced.

PBS concurs with the recommendation. Other comments are attached.

Should you have any questions, please contact me at (202) 501-1100.

Attachment

U.S. General Services Administration
1300 F Street, NW
Washington, DC 20405-0002
www.gsa.gov

**Corrections/Updates to the
Office of Inspector General's Draft Report
"Review of Cost Estimates for the Los Angeles Courthouse Project," (A080125)
Dated April 28, 2009
U.S. General Services Administration, Public Buildings Service**

Recommendation, Page No. 13: "Improve PBS's construction cost estimating accuracy by monitoring cost estimates against actual results to identify factors that could be enhanced."

PBS's Response: Concur.

Below are other PBS comments and clarifications with page number references for the OIG's consideration:

Page No. 1, Par. 4, first sentence: "In July 2000, the House Committee on Transportation and Infrastructure authorized and Congress appropriated funds to design a new 41-courtroom District Courthouse in Los Angeles and through Fiscal Year (FY) 2005 had appropriated approximately \$400 million for the project."

PBS's Response: Revise to read "In July 2000, the House Committee on Transportation and Infrastructure authorized and Congress appropriated funds to design a new 41-courtroom District Courthouse in Los Angeles and through fiscal year (FY) 2005 approximately \$400 million was appropriated for a new courthouse." The \$400 million was for a 41-courtroom courthouse to house the district and senior district judges, not a stand-alone district courthouse.

Page No. 4, Par. 2, third sentence: "The Roybal Building would contain 20 courtrooms and 20 chambers, thus providing a total of 61 courtrooms and 60 chambers at an estimated cost of \$1.139 billion."

PBS's Response: Revise to read "The Roybal Building would contain 20 courtrooms and 20 chambers, thus providing a total of 61 courtrooms and 60 chambers for the District Court at an estimated cost of \$1.139 billion." The number of courtrooms and chambers does not include the Bankruptcy Court in the Roybal Building.

Page No. 6, Par. 1, fifth sentence: "Like the original prospectus, it would also involve a partial renovation of Roybal, including four new courtrooms."

PBS's Response: Revise to read "Like the original construction prospectus, it would also involve a partial renovation of the Roybal Building, including the build out of four new courtrooms."

Page No. 8, Par. 2, second sentence: "This renovation project would provide 42 courtrooms in Roybal (16 existing, 26 new) and 17 in Spring Street (8 historic and 9 renovated), for a total of 59 courtrooms."

PBS's Response: Revise to read "This renovation project would provide 42 courtrooms in Roybal (16 existing, 26 new) and 17 in Spring Street (9 historic and 8 replicas), for a total of 59 courtrooms for the District Court."

Page No. 10, Par. 4, second sentence: "The new courthouse would contain 20 courtrooms and 20 chambers, while Roybal would contain 46 courtrooms and 55 chambers."

PBS's Response: Revise to read "The new courthouse would contain 20 courtrooms and 20 chambers, while Roybal would contain 46 courtrooms and 55 chambers, including 10 Bankruptcy Court courtrooms and chambers."

APPENDIX B – REPORT DISTRIBUTION

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